



# Mathematics

Applications and Concepts  
Course 3  
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STANDARDS	PAGE REFERENCES
<p>Standard 1-Students engage in the mathematical processes of problem solving and reasoning, estimation, communication, connections and applications, and using appropriate technology.</p> <p><i>These processes are essential to all mathematics and must be incorporated in all other mathematics standards.</i></p> <p><b>End of Grade 8</b></p>	
<p>1. Formulate and solve multi-step and nonroutine problems using a variety of strategies. Generalize methods to new problem situations.</p>	<p><b>Student Edition:</b> 474-477, 478-481, 484-487</p> <p><b>Teacher Wraparound Edition:</b> A 477, 487; B 474, 484; DI 475, 479</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 569, 574</i> <i>Practice: Word Problems 570, 575</i> <i>Study Guide and Practice 568, 573</i></p>
<p>2. Select and apply appropriate estimation strategies throughout the problem-solving process.</p>	<p><b>Student Edition:</b> 226-227, 228-231, 488-489, 600-601</p> <p><b>Teacher Wraparound Edition:</b> A 227, 231; B 226, 488; DI 226; NS 230</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 266</i> <i>Practice: Word Problems 267</i> <i>Study Guide and Practice 265</i></p>

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3. Interpret and communicate mathematical ideas and logical arguments using correct mathematical terms and notations.	<b>Student Edition:</b> 230 #1, 239 #2, 243 #1, 264 #2, 266 #1-#3, 269 #1, 274 #1, 283 #1, 292 #2 <b>Teacher Wraparound Edition:</b> A 227, 265, 275, 282, 294, 295
4. Recognize and investigate the relevance and usefulness of mathematics through applications, both in and out of school.	<b>Student Edition:</b> 37 #33, 42 #31, 55 #30, 65 #40, 66 #45-#46, 69 #11, 70 #33, 80 #48, 85 #35, 91 #36-#40, 127 ex 7, 139 #14, 173 #38, 197 #23, 233 #4
5. Select and use appropriate technology to enhance mathematical understanding. Appropriate technology may include, but is not limited to, paper and pencil, calculator, computer, and data collection devices.	<b>Student Edition:</b> 117 ex 4 <i>Graphing Calculator Investigation</i> 404, 425, 532, 543, 564 <i>Spreadsheet Investigation</i> 165, 245, 356, 439 <i>Study Tip</i> 12, 105, 121, 320, 385
<b>Standard 2-Students demonstrate understanding of and an ability to use numbers and operations.</b>	
<i>An understanding of numbers and how they are used is necessary in the everyday world. Computational skills and procedures should be developed in context so the learner perceives them as tools for solving problems.</i>	
1. Use the four basic operations with whole numbers, fractions, decimals, and integers.	<b>Student Edition:</b> 23-27, 28-31, 34-38, 71-75, 76-80, 82-85, 88-91 <b>Teacher Wraparound Edition:</b> B 23 <b>Teacher Resources:</b> <i>Practice: Skills</i> 17, 22, 27 <i>Practice: Word Problems</i> 18, 23, 28 <i>Study Guide and Practice</i> 16, 21, 26
2. Use mental mathematics and number sense in using order of operations, and order relations for whole numbers, fractions, decimals, and integers.	<b>Student Edition:</b> 11, 12 ex 1, 14 #14-#27, 79 #4, 221 ex 1-ex 2 <i>Study Tip</i> 25, 63, 73, 78, 127, 160, 188, 211, 238, 375
3. Use the relationships and applications of ratio, proportion, percent, and scientific notation.	<b>Student Edition:</b> 104-107, 156-159, 170-173, 206-209 <b>Teacher Wraparound Edition:</b> A 159, 173, 209; DI 157, 206; TNT 171 <b>Teacher Resources:</b> <i>Practice: Skills</i> 186, 201, 246 <i>Practice: Word Problems</i> 187, 202, 247 <i>Study Guide and Practice</i> 185, 200, 245

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4. Develop and apply number theory concepts (e.g., primes, factors and multiples) in real-world and mathematical problem situations.	<b>Student Edition:</b> 608, 609, 610, 612 <i>Review Vocabulary</i> 34
<p><b>Standard 3-Students use algebraic concepts, processes, and language to model and solve a variety of real-world and mathematical problems.</b></p> <hr/> <p><i>Algebra is the language of mathematics and science. Through the use of variables and operations, algebra allows students to form abstract models from contextual information.</i></p>	
1. Understand the concepts of variable, expression and equation.	<b>Student Edition:</b> 11-15, 39-42, 49 #49-#50, 53 #49-#50, 56 #42-#45 <b>Teacher Wraparound Edition:</b> A 42; B 39; DI 40; TNT 40 <b>Teacher Resources:</b> <i>Practice: Skills</i> 7, 32 <i>Practice: Word Problems</i> 8, 33 <i>Study Guide and Practice</i> 6, 31
2. Represent situations and number patterns using tables, graphs, verbal rules, equations, and models.	<b>Student Edition:</b> 39-42, 56 #42-#45, 512-515, 517-520, 521 #20-#24, 522-525, 553 <i>Hands-On Lab</i> 516 <b>Teacher Wraparound Edition:</b> DI 523 <b>Teacher Resources:</b> <i>Practice: Skills</i> 625, 630 <i>Practice: Word Problems</i> 626, 631 <i>Study Guide and Practice</i> 624, 629
3. Recognize and use the general properties of operations (e.g., the distributive property).	<b>Student Edition:</b> 11-15, 38 #62-#64, 58 #3 <i>Key Concept</i> 25, 76 <b>Teacher Wraparound Edition:</b> A 15 <b>Teacher Resources:</b> <i>Practice: Skills</i> 7
4. Solve linear equations using concrete, numerical and algebraic methods.	<b>Student Edition:</b> 45-49, 50-53, 56 #46-#58, 57 #23-#28 <b>Teacher Wraparound Edition:</b> A 49, 53; B 45, 50; DI 51 <b>Teacher Resources:</b> <i>Practice: Skills</i> 37, 42 <i>Practice: Word Problems</i> 38, 43 <i>Study Guide and Practice</i> 36, 41

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5. Investigate inequalities and nonlinear relationships informally.	<p><b>Student Edition:</b> 492-495, 496-499, 500-504</p> <p><b>Teacher Wraparound Edition:</b> A 495, 499; B 496; DI 492</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 584, 589, 594 <i>Practice: Word Problems</i> 585, 590, 595 <i>Study Guide and Practice</i> 583, 588, 593</p>
<p><b>Standard 4-Students demonstrate understanding of shape and an ability to use geometry.</b></p> <hr/> <p><i>The study of geometry helps students represent and make sense of the world by discovering relationships and developing spatial sense.</i></p>	
1. Identify, describe, construct, and compare plane and solid geometric figures.	<p><b>Student Edition:</b> 262-265, 272-275, 331-334 <i>Hands-On Lab</i> 330</p> <p><b>Teacher Wraparound Edition:</b> A 265; B 262; DI 263</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 313, 323, 393 <i>Practice: Word Problems</i> 314, 324, 394 <i>Study Guide and Practice</i> 312, 322, 392</p>
2. Understand and apply geometric properties and relationships (e.g., the Pythagorean Theorem).	<p><b>Student Edition:</b> 132-136, 137-140, 143 ex 2, 256-260, 262-265</p> <p><b>Teacher Wraparound Edition:</b> A 259; B 137, 256; DI 138</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 149, 308 <i>Practice: Word Problems</i> 150, 309 <i>Study Guide and Practice</i> 148, 307</p>
3. Represent geometric figures on a coordinate grid.	<p><b>Student Edition:</b> 142-145, 148 #42-#48, 151 #15, 290-294, 301 ex 1</p> <p><b>Teacher Wraparound Edition:</b> A 145; B 142</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 159, 338, 343 <i>Practice: Word Problems</i> 160, 344 <i>Study Guide and Practice</i> 158, 337, 342</p>

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4. Explore properties and transformations of geometric figures.	<p><b>Student Edition:</b> 290-294, 296-299, 300-303</p> <p><b>Teacher Wraparound Edition:</b> A 294, 299; B 290; DI 300</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 338, 343, 348 <i>Practice: Word Problems</i> 339, 344, 349 <i>Study Guide and Practice</i> 337, 342, 347</p>
5. Use geometry as a means of describing the physical world.	<p><b>Student Edition:</b> 137-140, 148 #37-#40, 150 #8, 151 #13</p> <p><b>Teacher Wraparound Edition:</b> A 323; B 335; DI 257</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 154 <i>Practice: Word Problems</i> 150, 155, 301, 379, 384, 399 <i>Study Guide and Practice</i> 153</p>
<p><b>Standard 5-Students demonstrate understanding of measurable attributes and an ability to use measurement processes.</b></p> <hr/> <p><i>The first step in scientific investigation is understanding the measurable attributes of objects.</i></p>	
1. Estimate, make, and use measurements to describe, compare, and/or contrast object in real-world situations.	<p><b>Student Edition:</b> 328 #14-#16, 329 #17-#20, 358-362, 367 #8</p> <p><b>Teacher Wraparound Edition:</b> B 358; DI 326, 359; TNT 328</p> <p><b>Teacher Resources:</b> <i>Practice: Word Problems</i> 389</p>
2. Select and use appropriate units and tools to measure to a level of accuracy required in a particular setting.	<p><b>Student Edition:</b> 358-362, 366 #38-#45, 367 #13-#15, 377 #33-#36, 383 #31</p> <p><b>Teacher Wraparound Edition:</b> A 362; B 358; DI 359; TNT 360</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 418 <i>Practice: Word Problems</i> 419 <i>Study Guide and Practice</i> 417</p>

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<p>3. Apply the concepts of perimeter, area, volume and capacity, weight and mass, angle measure, time, and temperature.</p>	<p><b>Student Edition:</b> 314-318, 319-323, 335-339, 342-345, 347-351, 352-355</p> <p><b>Teacher Wraparound Edition:</b> A 318, 323</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 378, 383, 398</i> <i>Practice: Word Problems 379, 384, 399</i> <i>Study Guide and Practice 377, 382, 397</i></p>
<p>4. Demonstrate understanding of the structure and use of systems of measurement, including English and metric.</p>	<p><b>Student Edition:</b> 604-605, 606-607</p>
<p>5. Use the concepts of rates and other derived and indirect measurements.</p>	<p><b>Student Edition:</b> 156-159, 188-191, 193 #10, 197 #28, 200 #28-#29, 201 #16, 203 #15, 209 #52</p> <p><b>Teacher Wraparound Edition:</b> A 191; DI 189</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 186, 216</i> <i>Practice: Word Problems 187, 217</i> <i>Study Guide and Practice 185, 215</i></p>
<p>6. Demonstrate relationships between formulas and procedures for determining area and volume.</p>	<p><b>Student Edition:</b> 314-318, 326-329, 335-339</p> <p><b>Teacher Wraparound Edition:</b> A 318; DI 326; TNT 328</p> <p><b>Teacher Resources:</b> <i>Practice: Skills 378, 388, 398</i> <i>Practice: Word Problems 379, 389, 399</i> <i>Study Guide and Practice 377, 387, 397</i></p>

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<p><b>Standard 6-The students demonstrate understanding of and an ability to use data analysis, probability, and statistics.</b></p>	
<p><i>With society's expanding use of data for prediction and decision making, it is important that students develop an understanding of the concepts and processes used in analyzing data.</i></p>	
<p>1. Systematically collect, organize, and describe data.</p>	<p><b>Student Edition:</b> 378-379, 420-424, 426-429 <i>Hands-On Lab</i> 434 <b>Teacher Wraparound Edition:</b> A 429, 433 <b>Teacher Resources:</b> <i>Practice: Skills</i> 502, 507 <i>Practice: Word Problems</i> 503, 508 <i>Study Guide and Practice</i> 501, 506</p>
<p>2. Construct, read, and interpret tables, charts, and graphs.</p>	<p><b>Student Edition:</b> 420-424, 426-429, 430-433 <i>Graphing Calculator Investigation</i> 425 <b>Teacher Wraparound Edition:</b> A 429; B 430; DI 421 <b>Teacher Resources:</b> <i>Practice: Skills</i> 502, 507, 512 <i>Practice: Word Problems</i> 503, 508, 513 <i>Study Guide and Practice</i> 501, 506, 511</p>
<p>3. Draw inferences, construct, and evaluate arguments based on data analysis and measures of central tendency.</p>	<p><b>Student Edition:</b> 435-438, 442-445, 449 #24, 461 #7-#10 <i>Spreadsheet Investigation</i> 439 <b>Teacher Wraparound Edition:</b> A 437; B 435; DI 436, 443 <b>Teacher Resources:</b> <i>Practice: Skills</i> 517, 522 <i>Practice: Word Problems</i> 518, 523 <i>Study Guide and Practice</i> 516, 521</p>
<p>4. Construct sample spaces and determine the theoretical and experimental probabilities of events.</p>	<p><b>Student Edition:</b> 374-377, 380-383, 394 #9-#11, 396-399, 400-403 <b>Teacher Wraparound Edition:</b> A 377, 383; B 374, 380; DI 375, 381 <b>Teacher Resources:</b> <i>Practice: Skills</i> 446, 451 <i>Practice: Word Problems</i> 447, 452 <i>Study Guide and Practice</i> 445, 450</p>

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5. Make predictions based on experimental results or probabilities.	<b>Student Edition:</b> 374-377, 380-383, 394 #9-#11, 396-399, 400-403 <b>Teacher Wraparound Edition:</b> A 377, 383; B 374, 380; DI 375, 381 <b>Teacher Resources:</b> <i>Practice: Skills 446, 451</i> <i>Practice: Word Problems 447, 452</i> <i>Study Guide and Practice 445, 450</i>
<b>Standard 7-Students demonstrate understanding of and an ability to use patterns, relations and functions.</b> <hr/> <i>One of the central themes of mathematics is the study of patterns, relations, and functions. Exploring patterns helps students develop mathematical power and instills in them an appreciation for the beauty of mathematics.</i>	
1. Describe, extend, analyze, and create a variety of patterns and functions.	<b>Student Edition:</b> 512-515, 517-520, 552 #9-#13, 555 #3-#5, 556 #4, 557 #13 <i>Hands-On Lab 516</i> <b>Teacher Wraparound Edition:</b> A 515; B 512 <b>Teacher Resources:</b> <i>Practice: Skills 620, 625</i> <i>Practice: Word Problems 621, 626</i> <i>Study Guide and Practice 619, 624</i>
2. Describe and represent relationships with tables, graphs, and rules.	<b>Student Edition:</b> 517-520, 522-525 <i>Hands-On Lab 521</i> <b>Teacher Wraparound Edition:</b> A 519, 521, 525; B 517; DI 518, 523 <b>Teacher Resources:</b> <i>Practice: Skills 625, 630</i> <i>Practice: Word Problems 626, 631</i> <i>Study Guide and Practice 624, 629</i>
3. Analyze functional relationships to explain how a change in one quantity results in a change in another.	<b>Student Edition:</b> 517-520 <i>Graphing Calculator Investigation 532</i> <b>Teacher Wraparound Edition:</b> A 532; B 517

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<p>4. Use patterns and functions to represent and solve problems.</p>	<p><b>Student Edition:</b> 518 ex 4–ex 5, 520 #23–#24, 525 #32, 555 #15–#17, 658 #1–#12</p> <p><b>Teacher Wraparound Edition:</b> A 519, 521; DI 518</p> <p><b>Teacher Resources:</b> <i>Practice: Word Problems</i> 626, 631, 636</p>
<p>5. Describe functions using graphical, numerical, physical, algebraic, and verbal models or representations.</p>	<p><b>Student Edition:</b> 517–520, 522–525 <i>Hands-On Lab</i> 521</p> <p><b>Teacher Wraparound Edition:</b> A 519, 521, 525; B 517; DI 518, 523</p> <p><b>Teacher Resources:</b> <i>Practice: Skills</i> 625, 630 <i>Practice: Word Problems</i> 626, 631 <i>Study Guide and Practice</i> 624, 629</p>